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10/657,098	09/09/2003	Masayuki Kuwabara	103446.01	9850

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EXAMINER

WERNER, BRIAN P

ART UNIT PAPER NUMBER

2621

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/657,098

Applicant(s)

KUWABARA, MASAYUKI

Examiner

Brian P. Werner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/315,136.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/9/03 &amp; 10/28/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

1. The first sentence of the specification should be updated to include the patent number of the now issued application 09/315,136, which is US 6,643,394 B1.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Feldman et al. (US 3,963,354 A).

Regarding claims 1 and 5, Feldman discloses an apparatus (figure 3) and corresponding method comprising:

imaging means for capturing images (figure 3, numeral 40; “charge-coupled imaging device” at column 4, line 15) of at least three areas arranged in a line on an object (figure 12,

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areas 1-1-1 through 10-1-1 are corresponding areas of 10 consecutive chips on a semiconductor wafer as depicted in figure 1);

image comparison means for dividing the areas into at least one group, each group including at least consecutive three of the areas (figure 12, the areas 1-1-1 through 10-1-1 are a group, in that all of the areas are used to determine whether each individual area has a defect as described below);

for designating one of the areas as a subject area (e.g., figure 12, area 6-1-1 is tested at column 7, line 22) and other two of the areas as comparison areas for the subject area (area 6-1-1 is compared with each of its neighbors as described below);

the comparison areas being in the same group with the subject area and within a predetermined distance from the subject area (areas 1-1-1 through 10-1-1 are all in the same group as described above, in that they are all used collectively for comparison with each individual area as described below; each of the areas is exactly one chip repetition period away from its adjacent neighbors as depicted in figure 4; e.g., area 1-1-1 in figure 4 is one chip away from area 2-2-2, “5mm” away) and for comparing the image of the subject area with the images of the comparison areas (“comparing the 6-1-1 signal with ... all the other signals” at column 7, lines 25 –27); and

defect detection means for detecting a defect in the object in accordance with the comparison between the images of the areas by the image comparison means (“true defect signal” at column 7, line 23),

wherein the image comparison means is configured to number the areas in each group along the line (figure 12, 1-1-1 through 10-1-1) and to select the comparison areas as follows:

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when the subject area is odd-numbered and is not one of ends of odd-numbered areas in the group (e.g., area 5-1-1 in figure 12), the comparison areas are two odd-numbered areas closest to the subject area (again, each and every individual cell is compared with “all the other signals”, or cells as described at column 7, line 27, and therefore included in “all the other” areas are “two odd-numbered areas closest to the subject area”; i.e., areas 3-1-1- and 7-1-1);

when the subject area is one of the ends of the odd-numbered areas in the group (e.g., area 9-1-1), the comparison areas are one odd-numbered area and one even-numbered area closest to the subject area (again, since each and every individual cell is compared with “all the other signals”, or cells as described at column 7, line 27, “all the other” areas include “one odd-numbered area and one even-numbered area closest to the subject area”; e.g., 10-1-1 and 7-1-1);

when the subject area is even-numbered and is not one of ends of even-numbered areas in the group (e.g., area 6-1-1), the comparison areas are two even-numbered areas closest to the subject area (again, since each and every individual cell is compared with “all the other signals”, or cells as described at column 7, line 27, “all the other” areas include “two even-numbered areas closest to the subject area”; e.g., 4-1-1- and 8-1-1); and

when the subject area is one of the ends of even-numbered areas in the group (e.g., area 10-1-1), the comparison areas are one even-numbered area and one odd-numbered area closest to the subject area (again, since each and every individual cell is compared with “all the other signals”, or cells as described at column 7, line 27, “all the other” areas include “one even-numbered area and one odd-numbered area closest to the subject area”; e.g., 9-1-1 and 8-1-1).

Regarding claims 2 and 6, the areas are arranged in a row on the object (e.g., figures 4 and 12; all the areas are in a row).

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Regarding claims 3 and 7, the imaging means relatively scans the object along the line to sequentially capture the images of the areas (as depicted in figures 5 and 6; e.g., image 1-1-1 is captured at time t1, and 2-1-1 at t2, etc. in a series and in a line).

Regarding claims 4 and 8, the imaging means relatively scans the object along the line by one of a CCD line sensor and a TDI sensor to sequentially capture the images of the areas (a CCD, or “charge-coupled image device” at column 4, line 15 is used to scan the object).

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1 and 5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2 and 5 of U.S. Patent No. 6,643,394 B1 respectively. The conflicting claims are not identical because patent claims 2 and 5 require the capture of “four or more areas arranged in a line”, whereas application claims 1 and 5 recite

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“three or more areas”. However, the conflicting claims are not patentably distinct from each other because the application and patent claims recite common subject matter, whereby application claims 1 and 5, which recite the open ended transitional phrase “comprising”, do not preclude the additional elements recited by patent claims 2 and 5, and whereby the elements of application claims 1 and 5 are fully anticipated by patent claims 2 and 5, and anticipation is “the ultimate or epitome of obviousness” (*In re Kalm*, 154 USPQ 10 (CCPA 1967), also *In re Dailey*, 178 USPQ 293 (CCPA 1973) and *In re Pearson*, 181 USPQ 641 (CCPA 1974)).

***37 CFR 1.105 Requirement for Information***

6. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

Specification page 2, at lines 8-12 describe a “conventional image processing method, which comprises the steps of rescanning only the peripheral chips ... and comparing those peripheral chips with the second chips to the inside from those chips in order to find whether the peripheral chips have a possibility of being defective”. The examiner finds this prior art to be pertinent in that it appears to describe applicant’s disclosed method of comparing chips at the end of a line with it’s two closest neighbors on that same line. The examiner requests submission of the actual prior art document, or any other documentation know to the applicant that teaches this concept.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain

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an item of required information, a statement that the item is unknown or cannot be readily obtained may be accepted as a complete reply to the requirement for that item.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Batchelder et al. (US 4,771,468 A) is pertinent as teaching a visual inspection apparatus (figure 1), comprising imaging means for capturing images (figure 1, "camera") of at least three areas arranged in a line on an object (the "pixel under test" and its "periodic neighbors" at column 5, line 33; depicted in figure 5, where the pixel under test is "Co" and its periodic neighbors are "lo" and "ro"); image comparison means for dividing the areas into at least one group, each group including at least consecutive three of the areas (i.e., figure 5; a group of pixels comprises the "pixel under test" and its "periodic neighbors" at column 5, line 33; this constitutes a "group" because, as explained below, the pixel under test is compared with its periodic neighbors); for designating one of the areas as a subject area ("pixel under test" at column 5, line 33) and other two of the areas as comparison areas for the subject area ("compared with periodic neighbors" at column 5, line 34), the comparison areas being in the same group with the subject area and within a predetermined distance from the subject area (figure 5, "R" is the predetermined "periodic" distance); and for comparing the image of the



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subject area with the images of the comparison areas (“compared” at column 5, line 33); and defect detection means for detecting a defect in the object in accordance with the comparison between the images of the areas by the image comparison means (a subroutine in the low level algorithm as depicted in figure 2 is for detecting a defect in the subject area in accordance with the comparison; see “flagging detected differences as defects” at column 5, line 41); wherein the image comparison means is configured to number the areas in each group along the line and to select the comparison areas as follows (figure 5, “Co” and its periodic neighbors are “lo” and ro”; the left neighbor is the first area of the group, the pixel under test is the second area, and the right neighbor is the third area); when the subject area is odd-numbered and is not one of ends of odd-numbered areas in the group, the comparison areas are two odd-numbered areas closest to the subject area (the subject area of Batchelder is always in the center and thus the second area as described above and as depicted in figure 5, it is always “even” (i.e., area no. 2) so this will criteria will never happen; given that this claimed element is a logical “when” limitation, and given that the “when” criteria does not occur in the Batchelder reference, this limitation need not be met by Batchelder); when the subject area is one of the ends of the odd-numbered areas in the group, the comparison areas are one odd-numbered area and one even-numbered area closest to the subject area (again, this criteria does not occur in Batchelder and therefore need no be met by Batchelder); when the subject area is even-numbered and is not one of ends of even-numbered areas in the group, the comparison areas are two even-numbered areas closest to the subject area (again, this criteria does not occur in Batchelder; the subject area of Batchelder (i.e., the “pixel under test”) is even as described above, and in the middle of the group).

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Batchelder does not teach that when the subject area is one of the ends of even-numbered areas in the group, the comparison areas are one even-numbered area and one odd-numbered area closest to the subject area. That is, the subject area of Batchelder is “Co” as depicted in figure 5, and given that “Co” is area number 2 as described above, and given that there are no other even areas, it is necessarily one of the “ends of even-number areas in the group” (in actuality, it is both ends). Therefore, “Co” is compared with its neighbors, which are both odd numbered areas 1 and 3, and thus Batchelder does not meet this requirement which calls for comparison with one odd and one even numbered area closest to the subject area.

Taniguchi et al. (JP 2-210249 A – Translation Provided) discloses an apparatus (figure 2) and corresponding method comprising imaging means (figure 2, numeral 71) for capturing images of at least three areas arranged in a line on an object (e.g., figure 7; the S numbers indicate scanning order; areas S1-S26 are captured in sequential scanning order, including many places where three consecutive areas are captured; e.g., areas S7-S9 are three consecutive areas arranged in line on an object; these areas are equivalent to areas A-C as depicted in figure 6, which will be used to exemplify the rejection below) and having peripheral ends (S1 and S26 are peripheral ends of the areas on the object); image comparison means (figure 2, numeral 9) for dividing the areas into at least one group (Note: the claim does not specify which areas are divided; the claim does not require the dividing of the at least three areas arranged in a line into a group), each group including at least consecutive three of the areas (Note: the claim does not require that the “at least three consecutive areas” to be the same as the “at least three areas arranged in line”; as depicted in figure 6; chips are compared with adjacent chips; e.g., in figure 6, portion c of chip B

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is compared with portions c of chips A and C; this is described at page 13 of the translation), designating one of the areas as a subject area (e.g., portion c of chip B as described above) and the other areas in the group as comparison areas (e.g., portions c of chips A and C as described above), the comparison areas being in the same group as the subject area (as described above, the groups comprise adjacent three chips in scanning order) and a predetermined distance from the subject area (adjacent chips are compared as depicted in figure 6), and comparing the subject area with the comparison areas (as above, and as depicted in figure 6, chips are compared with adjacent chips; this is described at page 13 of the translation); and defect detection means for detecting a defect in the subject area in accordance with the comparison (e.g., defect X in figure 6).

However, Taniguchi does not teach comparison of an odd-numbered area that is not one of the ends of the odd-numbered areas in the group with “two odd-numbered areas closest to the subject area”. For example, area S7 in figure 7 of Taniguchi is an odd numbered area not at the end of the group of S5-S10, and it is compared with S6 and S8 only. Thus, Taniguchi does not teach comparison with two other “odd-numbered areas” are required by the claim.

8. This Office action has an attached requirement for information under 37 CFR 1.105. A complete reply to this Office action must include a complete reply to the attached requirement for information. The time period for reply to the attached requirement coincides with the time period for reply to this Office action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Werner whose telephone number is 571-272-7401. The examiner can normally be reached on M-F, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Werner  
Primary Examiner  
Art Unit 2621  
February 7, 2006



**BRIAN WERNER**  
**PRIMARY EXAMINER**